

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

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25. JUNI 2004

Frist:

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing
(day/month/year)

24.06.2004

Applicant's or agent's file reference
T 44861WO/70/hs

IMPORTANT NOTIFICATION

International application No.
PCT/EP 03/02307

International filing date (day/month/year)
06.03.2003

Priority date (day/month/year)
06.03.2002

Applicant

LINN HIGH TERM GMBH et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

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REC'D 25 JUN 2004

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference T 44861WO/70/hs	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP 03/02307	International filing date (day/month/year) 06.03.2003	Priority date (day/month/year) 06.03.2002
International Patent Classification (IPC) or both national classification and IPC A23L1/182		
Applicant LINN HIGH TERM GMBH et al.		

- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 7 sheets, including this cover sheet.
 - ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 01.10.2003	Date of completion of this report 24.06.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Baminger, U Telephone No. +49 89 2399-2176 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/EP 03/02307**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-15 as originally filed

Claims, Numbers

2 as originally filed

1, 2a, 2, 3-25 received on 01.10.2003 with letter of 30.09.2003

Drawings, Sheets

1/3-3/3 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 2a, 9, 10

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):

☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 10 are so unclear that no meaningful opinion could be formed (*specify*):

see separate sheet

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for the said claims Nos. 2a, 9

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the Standard.

☐ the computer readable form has not been furnished or does not comply with the Standard.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1, 2-8, 11-25
	No: Claims	
Inventive step (IS)	Yes: Claims	1, 2-8, 11-25
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1, 2-8, 11-25
	No: Claims	

2. Citations and explanations

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Re Item I

Basis of the report

There are 2 claims numbered claim 2. For the purpose of this examination report, these are designated claim 2a and claim 2 in consecutive order.

Re Item III

Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

No opinion can be given on the present claims 2a and 9 since they contain subject-matter that was not searched (R. 66.1(e)).

No opinion can be given on the subject-matter of claim 10. Due to the term "the temperature may be higher or lower...." the claim is rendered unclear to the extent that no meaningful opinion can be formed (Art. 34(4)(a)(ii)).

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

- 5.1 The subject-matter of the independent claims 1 and 11 are novel in view of the prior art available.

Document WO0221050 is cited as a "P"-document in the search report and therefore not taken into account for the present report. The document may however become relevant in a European Regional Phase.

- 5.2 For the purpose of examining the inventive step of claim 1, D1 (DE3830965 A) can be regarded as the closest prior art.
D1(cf. col. 3, line 36 - col. 4, line 34 and ex. 1) discloses a process for the production of parboiled rice. In example 1, for example, paddy rice (unhulled rice) is soaked in water to achieve a moisture content of 32%. The rice is then filled into glass containers together with the soaking water and is continuously transported through a microwave tunnel, thereby being treated 4 min at 2450 Hz. After 2 min

the rice reaches a temperature of 100°C and after a further 2 minutes the endosperm is completely gelatinised. After the removal of the excess water, the rice is again passed through the microwave tunnel for drying (5 min).

The subject-matter of present claim 1 therefore differs with D1 in that

- a) hulled rice is used
- b) the rice is arranged in bags for microwave treatment and
- c) the microwave power per g (W/g) is not given.

The problem to be solved by the present application therefore appears to lie in the provision of an alternative short cooking time rice.

The solution over D1 found in claim 1 of the present application is to treat hulled rice arranged in bags and at a certain power per weight of the rice.

Producing hulled short cooking time rice is suggested by the prior art, however the treatment in bags and at a certain power level per weight of rice is not suggested by the prior art. Therefore claim 1 can be considered inventive according to Art. 33 (3) PCT.

- 5.3 For the purpose of examining the inventive step of claim 11, D1 (DE3830965 A) can be regarded as the closest prior art.

D1(cf. col. 3, line 36 - col. 4, line 34 and ex. 1) discloses a microwave tunnel with a conveyor belt for the production of parboiled rice.

Hulled rice packed into bags would also be movable through the tunnel of D1. A tunnel will also always comprise a "top area element" and a "bottom area element". Also, any geometric shape of the "top area" of a tunnel can be seen as adapted for the collection of water and steam in some unspecified way.

The subject-matter of present claim 1 therefore differs with D1 in the fact that the bottom area element has apertures, a perforation or channels suitable for distribution of remaining condensed water and steam.

The problem to be solved by the present application therefore appears to lie in the provision of an apparatus comprising a microwave tunnel and conveyor means therethrough, suitable for the production of short cooking time rice in bags.

The solution over D1 found in claim 1 of the present application is to equip the microwave tunnel with a modified bottom area element.

There is no indication in the prior art, including document DE19738882 (cited in the application on p. 10, line 15) to modify the disclosure of D1 to arrive at the present invention. Document DE19738882 (cf. claims and figures) discloses a

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microwave tunnel with conveyor means, however no mention is made of any means to deal with condensed water and steam. The perforation/holes in the metal bottom element are intended for other purposes and cannot be seen as inevitably suitable for distributing condensed water and steam. Therefore claim 11 can be considered inventive.

- 5.4 Claims 2-8 and 12-25 are dependent on claim 1 and 11 respectively and as such also meet the requirements of the PCT with respect to novelty and inventive step.

5 What is claimed is:

1. Process for the production of short cooking time rice characterized by that
hulled rice of at least 10 %, preferably (11-13) %, moisture content, if required in
10 packaging suitable for ready cooking, is heat treated for (1 to 30) minutes,
preferably for (1 to 12) minutes, further preferably for (3 to 5) minutes continuously
or interrupted by equal or alternating capacity microwave radiation, to reach
maximum 130°C.
- 15 2. Process according to claim 1, characterized by that rice is treated (0.05-4) W,
preferably (0.3-2) W, further preferably 0.25 W, capacity microwave radiation per
gram.
3. Process according to claims 1 or 2, characterized by that the microwave exposure
20 related to the mass unit of rice on steady or alternating capacity value (W/g).
4. Process according to claims 1 to 3, characterized by that microwave treatment is
done with microwaves of a frequency between 300 MHz and 10 GHz, preferably
with 2450 MHz.
- 25 5. Process according to claims 1 to 4, characterized by that rice is packed in foil or
bag used for ready cooking, preferably in polyethylene air-proof foil or bag or
coated paper foil or bag before the microwave treatment.
- 30 6. Process according to claims 1 to 4, characterized by that rice is packed in perforated
foil or bag used for ready cooking, preferably in perforated polyethylene foil or bag
before microwave treatment.
7. Process according to claims 1 to 6, characterized by that rice is microwave treated

by a (1-10) cm, preferably (3-7) cm layer thickness.

8. Process according to claims 1 to 7, characterized by that rice is treated continuously by 1.5 W/g microwave radiation for (1-6) minutes, preferably for 3 minutes.

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9. Process according to claims 1 to 7, characterized by that rice is treated in an interrupted way by 1.5 W/g microwave radiation (1-6 times), preferably three times (0.5-2) minutes, and between treatments there are (5-30) seconds, preferably 10 seconds breaks.

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10. Process according to claims 1 to 7, characterized by that rice is treated by 0.75 W/g microwave radiation for (1-4) minutes, and then by 1.5 W/g microwave radiation for (1-5) minutes.

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11. Process according to claims 1 to 7, characterized by that rice is treated by 0.3 W/g microwave exposure for (10-16) minutes, preferably for (10-12) minutes.

12. Process according to claim 10, characterized by that there are (5-30) second breaks between microwave treatments.

20

13. Process according to claims 1 to 12, characterized by that rice packed in a number of bags and staged one above the other are moved by means of the conveyor means through a tunnel provided in a microwave furnace, wherein in the tunnel there is generated a special wet atmosphere of (85 to 99)°C, preferably (90 to 95)°C, in the surrounding of the said rice bags.

25

14. Process according to claim 13, characterized by that the rice in the bags has a temperature of (80 to 120)°C, preferably (105 to 108)°C, wherein the temperature may be higher or lower depending on the pressure of the chamber atmosphere of the microwave treatment means.

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15. Apparatus for the production of short cooking time rice comprising a microwave

furnace, characterized by that in the microwave furnace (16) there is mounted a tunnel (38) made from a suitable material, wherein the rice packed into a package is movable within the tunnel (38) by means of a conveyor means.

- 5 16. Apparatus according to claim 15, characterized by that the tunnel (38) is made from ceramic material, plastic material, quartz glass.
17. Apparatus according to claim 15 or 16, characterized by that the tunnel (38) is provided with a top area element (48) which is adapted for collection of condensed
10 water and steam, respectively.
18. Apparatus according to claim 17, characterized by that the top area element (48) is formed in roof-like way, preferably angled or curved respectively semi-circular.
- 15 19. Apparatus according to claims 17 or 18, characterized by that the top area element (48) is provided with a collecting means for collecting drops of condensed water or steam, respectively.
20. Apparatus according to claims 17 to 19, characterized by that the top area element
20 (48) is provided with a cooling means for a better generation of condensation.
21. Apparatus according to claims 15 to 20, characterized by that the tunnel (38) is provided with a bottom area element (42) which is formed with apertures (54) or with a perforation or with channels for distribution of remaining condensed water
25 and steam, respectively.
22. Apparatus according to claims 15 to 21, characterized by that the volume ratio of said tunnel (38) and the volume of the rice packed in a number of bags (14) is preferably 3:1.
30
23. Apparatus according to claims 15 to 22, characterized by that the tunnel (38) and/or the microwave furnace (16) are insulated to prevent heat losses.
24. Apparatus according to claims 15 to 23, characterized by that the tunnel (38) is

equipped with an additional heating means.

25. Apparatus according to claim 24, characterized by that the additional heating means comprises at least one heating element and/or hot air.
- 5 26. Apparatus according to claims 15 to 25, characterized by that the tunnel (38) is equipped with a channel system for a heating medium, preferably hot-air, for heating the tunnel (38).
- 10 27. Apparatus according to claims 15 to 26, characterized by that the microwave furnace (16) is connected with a conduit means (26) which is provided with a heat exchange means (24) of a combustion engine (22) which is connected with a generator (20) provided for the generation of energy for the microwave furnace (16).
- 15 28. Apparatus according to claim 27, characterized by that the conduit means (26) is connected with a fan (32).
29. Apparatus according to claims 27 or 28, characterized by that the conduit means
20 (26) is provided with a filter element (34).
30. Apparatus according to claim 27, characterized by that the combustion engine is replaced by a solar heat exchanger.